

5 FAM 820 SITE MANAGEMENT

5 FAM 821 GENERAL POLICY

(TL:IM-14; 12-30-94)

a. The site that computer equipment is to occupy requires preparation. This depends on the equipment ordered and whether or not classified information is to be processed on the equipment. Vendors may provide customers with a site planning guide to help in site preparation for their systems.

(1) Installation and subsequent operation of equipment of a significant size will affect electrical distribution, floor weight, and heating and ventilation and air conditioning performance. Before purchasing computer equipment for installation at Main State, managers must obtain clearance from the Office of Facilities Management (A/OPR/FMSS).

(2) System managers or information management officers planning to install equipment in any of the Department's domestic annexes must check with that building's property manager to ascertain electrical power capabilities within the building.

(3) All new overseas facilities and major renovations to existing overseas facilities must comply with the Office of Foreign Buildings (A/FBO) design standards and be approved in advance by A/FBO for all computer hardware configurations.

(4) All classified computer systems (domestic and overseas) must be physically secured in accordance with security standards issued by the Bureau of Diplomatic Security.

b. The Department currently uses a variety of computer systems ranging from personal desktop computers (PCs) to those that require a special computer room to house the complete configuration of hardware. The type of system determines the amount of space needed. In all cases, there must be enough room to accommodate the equipment and, where necessary, to allow the operators and engineers enough room to work.

c. Funding for site preparation comes from the post or bureau. The post or bureau must also purchase and install the signal cable to be run from a central processing unit (CPU).

5 FAM 822 SYSTEM SITE AND RELATED REQUIREMENTS

5 FAM 823 PERSONAL COMPUTERS

(TL:IM-14; 12-30-94)

The base of a PC can be installed on a desk or on the floor. The back of the CPU, where the ventilation fan is located, should be kept away from the wall and away from where it will collect dust or where a dry copier will blow exhaust on it. The air conditioning requirement for a PC does not exceed that of the normal office. Anti static mats may help if dryness exists. A serious problem will require a humidifier. A system manager must consider all of these factors when selecting a site for a PC.

5 FAM 824 COMPUTER ROOMS

(TL:IM-14; 12-30-94)

Computer rooms should be located in interior portions of the buildings as far away as possible from areas subject to frequent use. They should also be located above ground to avoid possible flooding. Windows in exterior walls should be covered with shatter-resistant window film (4 mil) and curtains. Office space for the system manager and programming staff should be physically separated from operations personnel. Ideally, an operator will have an office on site, with a transparent wall between the operator and the computer room. This wall will allow the operator to monitor the equipment.

5 FAM 824.1 Floor

(TL:IM-14; 12-30-94)

a. The floor beneath the computer equipment must be dry and level. Also, the floor must be stable (free of vibration), capable of bearing heavy weights, and uncarpeted. If the existing floor cannot meet these requirements, a raised floor should be installed. Carpet tiles are acceptable if a raised floor is installed.

b. Water damage is an important consideration when a raised floor is installed. If the computer facility is close to water lines in the building, they could cause water leaks that could go undetected for days. A battery-powered water detection device that is easily mounted under the raised floor, or in any locations where water may collect is recommended. The system manager should check batteries regularly to assure continued operation.

5 FAM 824.2 Air Conditioning

(TL:IM-14; 12-30-94)

a. Computers require cool temperatures even in the winter when the building heat is on. For a computer room, consider providing air conditioning separate from that required by the rest of the building. A detailed description of the temperature/humidity/air conditioning requirements of the equipment is usually available from the vendor.

b. Due to local conditions of temperature, humidity, and/or dust/air pollution, it may be necessary to run the system's air conditioning 24 hours a day, 7 days a week. The system manager should establish a consistent policy, and keep all users informed.

c. Air conditioning should be able to filter dust and air pollution. This is especially important when the system has tape drives or external disk drives.

d. **VS Systems**—The following are general considerations on air conditioning for VS systems for use by a system manager:

(1) To compute the number of BTUs of air conditioning required, follow the formula provided in the Customer Site Planning Guide.

(2) The building's air conditioning units may not be sufficient. The computer will require constantly controlled temperature and humidity—even during the colder times of the year. The amount of air conditioning the system needs may overburden the building units. Another important consideration is that building units are usually turned off over weekends.

(3) The only place that needs extra air conditioning is the computer room. This air should circulate fully around the room. If the room has a raised floor, arrange for some of the air to pass under the floor and some to pass above the floor.

(4) Even if the computer room will be unacceptably dry or damp only at certain times of the year, a humidifier or dehumidifier will be needed.

(5) A hygrothermograph is used to measure temperature and humidity in the computer room. If the computer room is designated as a controlled access area, the hygrothermograph must be purchased from random sources as defined in the Diplomatic Security Standards Handbook.

(6) Because the temperature and humidity will have to be adjusted periodically, the computer room staff must have easy access to the controls.

(7) Air conditioning also acts as a filter. If dust and air pollution exist in large quantities, consider filtering the air.

(8) Install a switch by the power-off switch outside the computer room to allow the operator to cut the air conditioners off in the event of an emergency.

(9) If the air conditioners are going to be off for more than 10 minutes, the system manager should power off the system to prevent heat damage to the computer.

5 FAM 824.3 Power

(TL:IM-14; 12-30-94)

a. No computer system can tolerate unstable power. It will have system failures and lose data if the power fluctuates too much. Systems that require large amounts of power should be installed at a site close to main power panels. The hardware vendor can supply specific power requirements for the computer room as a whole and for each piece of equipment.

b. Before installing a system at an overseas site, the system manager should consult with A/FBO/PE/BDE and do the following:

(1) Compute the power requirement for the system ordered. Note devices requiring dedicated or isolated power (external disk drives, for example).

(2) Put a line analyzer on an outlet in the area where the computer will be installed to ascertain the quality of power available. If the variance in power (sags and surges) exceeds the tolerances of the system, condition power. With the exception of single user devices, power conditioners and uninterruptable power supply (UPS) systems installed overseas must be approved by A/FBO/PE/BDE. A/FBO/PE/BDE can identify power conditioner vendors that are known and which the Department can support.

(3) If it is necessary to put in extra lines or connectors, the system manager should consult with A/FBO before doing so. If there is a special room for the equipment, have an emergency cut-off switch installed at the door to allow one to cut power to the room without entering it.

(4) If using a regular wall outlet, be sure the circuit is not shared with an outlet for an air conditioner, heater, or other devices that periodically consume a large amount of power.

c. VS System—

(1) When computing the power requirements for a site, the system manager should add extra power to the calculated total to allow room to grow. Future power growth requirements should not be planned beyond 20% unless firm estimates of specific future usage are known. Also have extra outlets installed in the computer room. The majority of these should be dedicated lines.

(2) Power in the computer room must be conditioned. There are two kinds of conditioners. The first is the power regulator, which absorbs the surges and sags that normally occur. The other type is the UPS, a large, expensive piece of equipment with a collection of batteries. It provides a specified number of minutes of clean power to the computer if utility power drops below a certain voltage or is lost totally. These minutes provide time to start a generator or power down the computer. Realistically, the UPS is most useful if it has a generator available that automatically starts when power is lost. From a system performance viewpoint, having the conditioning equipment near the computer equipment results in better quality power. Usually small to medium sized UPS units are quiet and designed for use in office environments. Larger systems, however, will need to be located in separate rooms.

(3) Power to workstations and printers must be grounded and should be reasonably clean but does not have to be conditioned unless there are chronic power fluctuations.

(4) Label the power distribution panel to indicate which equipment is served by the panel. Locate these panels in an area with protection adequate to prevent accidental or malicious interruption of power.

(5) Ask the electrician to install an emergency power off (EPO) switch by the door to the computer room. In case of an emergency, this switch provides the operator a means to cut all power to the room without entering it. Cover the switch to protect it from accidental triggering.

(6) Before giving instructions to the electrician, decide exactly where in the room each piece of computer equipment is to be placed. Different types of equipment may require different power receptacles and have different lengths of electrical cable. For overseas systems with centralized UPS, A/FBO/PE/BDE requires the use of NEMA L5 (120V) or L6 (220V) twistlock grounded receptacles. Only 15 amp rated receptacles and plugs should be used since 20 amp and 15 amp receptacles are not compatible. Also, work out with the customer engineer and the supplier of the power conditioning equipment exactly what power is to go into and come out of the conditioner. The system manager should supply, on paper, the following to the electrician:

- The location of the power conditioner.
- Exactly what kind of power to feed into the conditioner. If there are multiple conditioners, tell the electrician exactly how the power should be apportioned between them.
- Exactly what kind of power is to come out of the conditioner. Many conditioners are adjustable or require calibration. The conditioner vendor can help you.
- For larger conditioners that are not a simple plug-in type, a bypass means should be provided.
- The exact location and receptacle type for each outlet in the site. Remember to include extra outlets, especially for such devices as workstations and printers as well as service outlets near the CPU and disk drives for the field service technicians. Test outlets before connecting equipment; equipment can be damaged if the outlet is wired incorrectly.

(7) Once the installation is completed, keep a copy of the specifications given to the electrician, together with any amendments.

(8) If power problems develop after the installation is completed, ask the vendor to install a line analyzer. This will keep a record of power sags and surges. It will confirm the existence and severity of the problem. The analyzer should run for several weeks. Once the information is accumulated, discuss with the electrician (or if overseas, check with A/FBO/PE/BDE) as to what steps can be taken to improve the quality of power.

5 FAM 824.4 Fire Protection

(TL:IM-14; 12-30-94)

The system manager should follow A/FBO/OPS/FIR guidelines and requirements. Federal policy prohibits the installation of halon fire suppression systems, the re-servicing of existing systems, and indiscriminately placing halon portable fire extinguishers. A/FBO advocates using sprinkler systems with special ON-OFF discharge heads, automatic detection systems, and power shut-down. A/FBO recommends replacing halon portable fire extinguishers with carbon dioxide (CO-2) portable extinguishers for use on electrical equipment. Inspect extinguishers periodically to ensure they are serviceable.

5 FAM 825 CABLING

(TL:IM-14; 12-30-94)

a. Three kinds of cable are used at computer sites:

(1) Coaxial cable—used to connect peripherals such as workstations and printers to a central processing unit (CPU) or to a controller in the local area network (LAN);

(2) Fiber optic cable—used in lieu of coaxial cable; and

(3) Twisted pair—used only in emergencies for short runs and low data rates. It is not to be used for classified systems.

b. Cable may also be coated with Teflon or with PVC. PVC cable is cheaper but can only be used within certain restrictions. PVC cable gives off a toxic gas when burned; therefore, it cannot be installed in a conduit that serves as an air plenum, e.g., a space such as a false ceiling essential to the room's air flow.

5 FAM 826 THROUGH 829 UNASSIGNED